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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/825,870	04/05/2001	Leonid Grigorian	052833-5004	3120

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EXAMINER

LISH, PETER J

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/825,870

Applicant(s)

GRIGORIAN ET AL.

Examiner

Peter J Lish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Response to Arguments***

Applicant's arguments filed 9/13/04 have been fully considered but they are not persuasive. Applicants argue that the reference to Xu et al. states a range of pressures at which that carbon source gas may be introduced, but that the pressure of the carbon source gas need not correspond to the pressure under which nanotube growth occurs. Applicants argue that the range cited by the examiner (namely that of column 8, lines 61-63) of between 1 millitorr and several atmospheres is in reference only to the carbon-containing gas and need not correspond to the pressure at which the nanotube growth takes place. However, it is seen that the reference teaches the use of this pressure range in regards to the carbon-containing gas either in pure form or with a carrier gas such as argon or nitrogen (and optionally containing hydrogen). Because no other gases are taught, or generally used, in the process of growing carbon nanotubes by chemical vapor deposition, it is expected that this pressure range be the pressure at which the growth of the carbon nanotubes occurs.

Applicant additionally cite the examples of Xu et al. which make use of pressures between 0.1 to 1 torr, arguing that while Xu et al. teach a range of pressures for the carbon containing gas, the pressure at which the nanotubes are grown in the examples of Xu et al. are well below the claimed range of 400 to 600 torr. Applicants infer that the nanotubes are therefore grown under these low-pressure conditions, as opposed to under the range of pressures taught in column 8. It is first noted that the pressures used in the examples of Xu et al. are stated to be "between 0.1 and 1 torr of acetylene" and "200 millitorr of acetylene", which, contrary to applicants inference, are the pressures of the carbon source gases. Therefore, the applicant's

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argument that this represents the true pressure under which the nanotubes are grown, as opposed to the range of carbon containing gas pressures taught in column 8, is unfounded.

Furthermore, the pressures used in the examples of Xu et al. are within the range taught by Xu et al. in column 8, and thus serves to support the pressure range cited by the examiner. While Xu et al. may not specifically show examples using pressures within the range claimed by the applicant, the teaching of Xu et al. is not limited only to its examples.

There is no reason to expect, from the reading of Xu et al., that any difference be present between the pressure of the carbon containing gas (with or without carrier) and the pressure at which the nanotubes are grown. Therefore, the range of pressures taught in column 8, namely between 1 millitorr and several atmospheres, is relied upon by the examiner and is seen to incorporate the range of pressures claimed by the applicants.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al. (US 5,973,444).

The rejection of the previous office action is maintained in its entirety and incorporated herein by reference.

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Claims 5 and 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al. (US 5,973,444) as applied above and further taken with Resasco et al. (US 6,413,487).

The rejection of the previous office action is maintained in its entirety and incorporated herein by reference.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 2001/0031900 A1, to Margrave et al.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

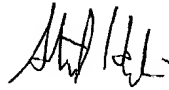
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

PL

A handwritten signature in black ink, appearing to read 'Stuart L. Hendrickson'.

STUART L. HENDRICKSON
PRIMARY EXAMINER